Solid Waste Program Costs:
A Study of Selected Maine Communities

December 1999

<u>Acknowledgments</u>

<u>CONTENTS</u>

<u>APPENDICES</u>

TABLES

1. Municipal Rubbish Costs
2. Community Rubbish Costs (estimates)
3. Municipal Recycling Costs
4. Community Recycling Costs (estimates)

I. EXECUTIVE SUMMARY

The purpose of this report is to provide the results of a recent study conducted by the Maine State Planning Office which involved collecting and analyzing 1998 solid waste cost data for 22 Maine towns. The significance of this study is that it is among the first to collect this type of detailed and comprehensive data on municipal solid waste for both solid waste recycling and disposal. In addition, the 22 towns in the study were selected with the goal of including towns with all four types of collection programs (municipal, contract, private and drop-off), as well as having some representation from different parts of the state. Finally, one of the major goals of the study was to compare the cost of recycling to the cost of solid waste disposal for each town, and attempt to draw some conclusions about program costs based on program type.

While the scope of this study was extensive, it is difficult to draw conclusions about recycling versus disposal for the state as a whole; 22 towns out of 493 is not considered a large enough sample to allow for simple generalizations for the state. However, some general trends and observations based on program type can be made.

- Even for similar type of programs, between similar communities, there are cost differences which reflect the individuality of each community and the nature of the program they have selected.

- The cost data collected through this study is from municipal financial statements that are not always activity or category specific. Some estimates were made to determine where costs should be placed. The cost category with the highest level of estimation is in the area of 'how much time does the staff devote to the transfer station versus the recycling center' and similar labor divisions.

- A major item to note is the variation in the value received by the community upon the sale of their recyclables. According to the results of the study, the average price is $14 per ton, yet market conditions during 1998 indicated that the average price was more than twice that value. This is important to note because of the close proximity of the costs of providing solid waste disposal and recycling services to Maine communities.

- While there is some variation among municipalities, the overall average cost per ton for recycling and disposal of solid wastes are almost exactly the same -- *just over $100/ton*.

- The average cost of *rubbish* collection for a municipality ($36.80/ton) is slightly lower than for private ($46.12/ton) and contract ($50.11/ton) collection. There is a similar difference in the cost of *recycling* collection; municipal collection averages $59.59/ton versus contract at $78.50/ton.

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II. LIST OF TERMS
(as used or referenced in this report)

Solid Waste:

- **Avoided Cost:** This figure represents the difference between the cost of disposal and recycling. When disposal costs are higher than recycling costs, there is a positive avoided cost.
- **Municipal Solid Waste (MSW):** Municipal solid waste (MSW) includes both rubbish and recyclables. It is the normal non liquid waste from households, commercial establishments, and institutions (e.g., schools and municipal offices). Liquid wastes, discarded automobiles, industrial wastes, hazardous and special wastes are excluded from Maine's MSW definitions.
- **Rubbish:** Municipal Solid Waste (MSW) that is managed through disposal.
- **Recyclables:** Materials separated and recovered from MSW and used in the manufacture of new products or reused.
- **Bulky MSW:** "Bulky waste" means useless, unwanted or discarded tires, appliances, furniture or furnishings, wood waste, yard waste, inert fill, land clearing debris and construction and demolition debris.
- **Disposal:** "Disposal" refers to the management of MSW through either landfilling or incineration through waste-to-energy facilities.

Municipal Solid Waste Collection Types:

- **Contract:** Municipalities negotiate a contract with a private company to perform curbside collection of MSW.
- **Drop-off:** Municipalities provide an area for residents to drop off MSW.
- **Municipal:** Municipalities use municipal trucks and labor to perform curbside collection.
- **Private:** Residents hire private companies to perform curbside collection.

Facilities:

Solid Waste Landfills: "Solid Waste Landfill" means a waste disposal facility for the disposal of solid waste on or in land. This term does not include landspreading.

- **Waste Management, Inc. (WMI), Crossroads Landfill in Norridgewock --** owns and operates a secure landfill in Norridgewock, Maine. Accepts municipal solid waste (MSW), special waste, bulky waste, construction/demolition debris and manage recyclables from municipalities and businesses.

Waste-to-Energy facility: "Waste-to-energy facility" means a facility that processes and/or combusts waste to produce fuel or energy. The four waste-to-energy facilities in the state are listed below:

- **Maine Energy Recovery Company (Maine Energy), Biddeford**
- **Mid-Maine Waste Action Corporation (MMWAC), Auburn**
- **Penobscot Energy Recovery Company (PERC), Orrington**
- **Regional Waste Systems (RWS), South Portland**

Waste to Energy Facility Fees & Capacities:

Facility	Current tipping fee - $ per ton (as of 8/6/99)	Daily process capacity (tons/day)	Annual process capacity (tons/year)	% Process capacity utilized (1997-98)
PERC	56	1,100	270,000	102%
Maine Energy	55	1,000	250,000	102%
RWS	58	550	170,000	112%
MMWAC	39-55	200	70,000	130%
Total Capacity		**2,850**	**760,000**	**Avg.: 107%**

Organizations:

- **Eastern Maine Recycling (EMR)** -- A private solid waste management services firm located in Southwest Harbor, Maine.

- **Lincoln County Recycling (LCR)** -- A regional recycling program operated by Lincoln County; They accept recyclables from 29 communities.

- **Maine Resource Recovery Association (MRRA), Bangor** -- A statewide recyclables marketing cooperative supported by Maine municipalities and regional solid waste groups.

- **Sandy River Recycling Association (SRRA), Farmington** -- A nonprofit regional recycling processing facility that handles recyclables for 18 towns.

III. SOLID WASTE PROGRAM DESCRIPTIONS

The following is a brief description of the solid waste programs of each of the communities selected for this study. The information was gathered from interviews with the municipal officials or solid waste managers and reflects the state of the programs in 1998. Any changes or additions to the programs since 1998 are not highlighted in this report. The descriptions contain several facilities and organizations in the state of Maine that are important components of the solid waste programs. Please refer to the "List of Terms" at the beginning of this report for a brief description of these facilities and organizations.

The communities are listed in alphabetical order. Please refer to **Appendix M** for a list of the recyclable materials each community collects or accepts. **Appendix N** takes much of the information listed below and presents it in graphical form. It also contains information about the population, land area, population density, and designation.

Auburn

Auburn operates its own weekly collection of both rubbish and recyclables. The rubbish collection program employs an average of 4 trucks and 6 employees. The recycling collection program requires an average of 3 trucks and 3 employees.   Auburn does not operate its own transfer station or recycling facility, but owns 55% of the quasi-municipal Mid Maine Waste Action Corporation (MMWAC), which operates as a waste-to-energy facility. All rubbish and recyclables collected in the community are brought to MMWAC for processing and disposal. MMWAC retains all revenue from the sale of recyclables to offset operation costs. MMWAC also serves as a recyclable drop-off point for Auburn residents.

Bangor

Bangor contracts out weekly curbside collection of rubbish, which is then hauled directly to Penobscot Energy Recovery Company (PERC), a waste-to-energy facility in Orrington. The community provides weekly collection of recyclables with municipally furnished vehicles. Bangor also operates a regional recycling processing center that takes in recyclables from Bangor and 27 other communities. The recycling center is housed in a renovated municipal building and includes scales, balers and a glass crusher. Bangor reports that materials are marketed through Maine Resource Recovery Association (MRRA), Zaitlin, Bowater, PERC, Kramer Scrap, Industrial Metals, and Graham Plastic.

Bar Harbor

Bar Harbor has high seasonal population variations. Residents contract with private haulers to collect both rubbish and recyclables. The town operates a transfer station that serves as a drop-off point for residents and the private haulers. Rubbish is then hauled to PERC by Eastern Maine Recycling (EMR), a private solid waste management services firm. The recycling portion of the transfer station includes a forklift, 2 balers and a glass crusher. Bar Harbor reports marketing the recyclables through Sawyer Environmental, MRRA, Hannaford Brothers, and PERC.

Bath

Bath contracts out weekly collection of both rubbish and recyclables to private haulers. Rubbish is brought directly to the Bath owned landfill. The current landfill was built on the site of the old landfill in 1980, 2 miles north of the center of town. It covers 15 acres and operates as a drop-off point for rubbish and recyclables. All Bath's recyclables are hauled to the West Bath processing facility and are processed there for $41/ton. 91% of the revenue from the sale of recyclable materials is returned to Bath. Bath is currently building a reuse barn and has a recycling ordinance in place to increase tonnage diverted from the landfill.

Bowdoinham

Bowdoinham contracts out weekly curbside collection of both rubbish and recyclables. Rubbish is hauled directly to MMWAC in Auburn. The recycling center operates as a drop-off point for the contractor and for residents. The center accepts commingled recyclables and thus reduces the recycling effort required by the residents. Commingled recyclables collection and a pay-by-the-bag program for rubbish gives Bowdoinham relatively high recycling rates. The center also provides a reuse area and promotes backyard composting. Bowdoinham markets recyclables to Gardiner Paperboard, William Goodman and Sons, Great Northern Recycling, Maine Recycling Corporation, MMWAC, Maine Metal Recycling and Goodwill Industries.

Bristol/South Bristol

The Bristol/South Bristol area is a coastal region with high seasonal population variances. Residents are responsible for delivery of rubbish and recyclables to the transfer station in Bristol. Rubbish is hauled to MMWAC. The station has a separate building to accept recyclable materials, but does not operate any balers or crushers. The materials are processed and marketed by Lincoln County Recycling. Bristol owns 60% of the facility, while South Bristol owns 40%. Due to the geography of the region, residents may drive up to 20 miles round trip to drop off solid waste.

Brunswick

Brunswick is home to Bowdoin College and Brunswick Naval Air Station, and runs its own weekly collection of rubbish and recyclables. The solid waste program uses 5 trucks for hauling and collection. The community contracts out curbside collection of rubbish for mobile home parks. Brunswick also operates its own landfill that accepts only Brunswick residential and commercial rubbish. A strict recycling ordinance helps keep recyclables out of the waste stream. The recycling center is located near the municipal garage and operates as a drop-off point for municipal trucks and residents. The center has a horizontal baler and a skidsteer and markets materials through Great Northern Recycling, Maine Recycling Corporation and Global Recycling.

Buckfield Area

The Buckfield area consists of the towns of Buckfield and Sumner. These towns provide no curbside collection, but provide a transfer station in Buckfield. Rubbish is hauled from the transfer station to MMWAC. The recycling portion of the transfer station houses 2 balers, a glass crusher and a forklift. The processed material is then marketed by Great Northern Recycling. 65% of transfer station is owned by Buckfield while the remaining 35% is owned by Sumner.

Bucksport Region

The Bucksport region is made up of the towns of Bucksport and Orland. The area has no curbside collection, but accepts both rubbish and recyclables at the transfer station, 1.5 miles north of the Bucksport town center. Rubbish is hauled from the station to PERC, and recyclables are processed on site. Materials are processed with balers and crushers, and marketed by Great Northern Recycling and PERC. Orland pays 22% of the cost of the facility, and shares in 22% of any revenues the materials bring in. The facility also serves as an education site for school children, offering tours of the old landfill site and of the recycling processing equipment.

Clinton Region

The Clinton Region consists of the towns of Clinton and Benton. Weekly curbside collection of rubbish and recyclables is provided by private haulers hired by residents. The transfer station accepts the material from the private haulers and also serves as a drop-off point for residents. Rubbish is then hauled to PERC, and recyclables are processed on site. The station operates 2 balers, a forklift and a waste oil furnace, and markets its materials through the MRRA.

Ellsworth

Ellsworth contracts curbside collection for recyclables and rubbish. Rubbish is collected once per week and hauled to the municipal transfer station. The town owns the building, but the operation of the facility is contracted out. Rubbish is hauled to PERC for incineration. Recyclables are collected once per month and are also processed and marketed by a contracted firm. Ellsworth incurs no processing costs, and receives an annual payment for the lease of the recycling center building from the contracting firm. Ellsworth employs a pay by the bag system and has a recycling ordinance to increase recycling rates.

Farmington

Farmington has weekly curbside collection of rubbish and recyclables furnished by private haulers. The town does not pay tipping fees for rubbish at Waste Management, Inc., Crossroads Landfill in Norridgewock, thus the residents must pay the full cost of collection and disposal tipping fees through their private haulers. The town will accept rubbish that residents drop-off, but it charges $3 per bag ($2 if the resident drops off recyclables as well). The trailer that serves as the rubbish drop-off point is owned and operated by a private hauler, so the town faces no additional costs.   The private haulers bring loose recyclables to Sandy River Recycling Association facility (SRRA), and the town pays the $28/ton processing fee. The town also operates a drop-off point for recyclables at the recycling center, but has no processing equipment. Loose drop-off recyclable materials are hauled to SRRA.

Kennebunkport

Kennebunkport's rubbish is collected weekly by town contracted haulers and taken directly to Maine Energy Recovery Company (MERC). Recyclables are collected twice per month and hauled to the Kennebunk recycling center. Kennebunkport and Kennebunk each own part of the recycling facility and share the operating costs. Revenues from the sale of recyclables are used to defray operating costs.

Kingfield

Kingfield residents hire private companies to collect rubbish and recyclables weekly and bring them to the regional transfer station in Kingfield. Rubbish is then hauled to Waste Management, Inc., Crossroads Landfill in Norridgewock. All trash must be transported in clear plastic bags, and there is a maximum $100 fine if recyclables are commingled with the rubbish. Recyclables from private haulers and residents are dropped off at the transfer station and hauled loose to SRRA. The costs of the regional transfer station are shared according to the following percentages: Kingfield, 45%, New Portland, 40%, and Franklin County, 15%.

Lewiston

Lewiston contracts out the weekly collection of both rubbish and recyclables. The majority of the rubbish is hauled to MMWAC to be incinerated. The Construction & Demolition Debris (CDD) portion of the rubbish is disposed of in the municipal landfill. The Lewiston landfill only accepts rubbish from Lewiston and incinerator ash from MMWAC. Recyclables from Lewiston, as well as from Turner, Leeds, and Greene, are brought to the city owned processing center. The recycling center houses a conveyor system, balers, and roll-off containers. Processed materials are marketed through MRRA, Maine Recycling Corporation, and MMWAC.

Livermore

Livermore has weekly private collection of rubbish. The private haulers bring the rubbish to the municipal transfer station. From there, the rubbish is hauled to the Jay Transfer Station where a $60/ton fee is charged. The town does not provide curbside collection of recyclables, but it does offer a drop-off point at the transfer station. The recycling center has no processing equipment so it passes on its materials loose to Reclaim Salvage and Great Northern Recycling. Livermore also enforces a recycling ordinance to improve recycling rates.

Mount Desert

Mount Desert is a community made up of four villages. The town provides curbside collection of rubbish twice a week during the summer and once per week for the rest of the year. Rubbish is hauled directly to Eastern Maine Recycling (EMR) in Southwest Harbor. EMR then hauls rubbish to PERC. The town owns a recycling drop-off facility that consists of several roll-off containers under a large roof. Recyclables are then brought to EMR for processing and marketed through MRRA.

Oakland

Oakland residents are responsible for delivery of their rubbish to the municipal transfer station. Rubbish is then hauled to Waste Management Inc., Crossroads Landfill. The town does operate a monthly curbside collection of recyclables with one truck and a trailer. Recyclables are then marketed by the facility manager to Trash Disposal Service Inc. in Fairfield, Maine Recycling Corporation, Industrial Metal and Bragg Farm.

Pittsfield

Pittsfield has private weekly collection of rubbish. Rubbish is brought to a municipal transfer station and then hauled to PERC. Recyclables are collected curbside twice a month by one municipal pickup truck. They are processed at the municipal recycling center that has 4 balers, a forklift, 2 glass crushers, and a wood chipper. The recycling coordinator then markets the materials through a combination of the MRRA, Great Northern Recycling, Grimmel Industries and Maine Recycling Corporation.

Skowhegan

Skowhegan has private collection of both rubbish and recyclables. Rubbish is brought to a municipal transfer station 1.5 miles north of the town center, and then hauled to Waste Management Inc. Crossroads Landfill in Norridgewock. Recyclables are collected once a month and processed with 3 balers, a forklift, and a bucket loader. Processed materials are marketed through MRRA, SRRA, Maine Recycling Corporation and Grimmel Industries.

IV. METHODOLOGY

Municipal Solid Waste Annual Report

One of the goals of the Waste Management and Recycling Program is to provide municipalities with accurate cost data about solid waste program costs. In order to accomplish this goal, each community, as part of their 1998 Municipal Solid Waste Annual Report, was asked to fill out an optional survey pertaining to the annual costs of disposal and recycling programs, as well as qualitative information about solid waste programs.

The data received from the 1998 survey responses was used as a framework to design a more detailed cost study. The purpose of this study was to ensure that the same variables were accounted for in each of the municipalities' cost numbers. Another goal was to obtain more detailed information on the costs of each of the disposal and recycling program components.

Selection of Communities

The programs chosen for the detailed cost study were identified from among the 220 municipalities and solid waste regions that submitted the 1998 Solid Waste Annual Report by August 1st, 1999. The main factor considered for selection was the MSW collection type. At least three programs were chosen to represent each of the four collection types (contract, drop-off, municipal, private). Additional communities were selected to in order to gain geographic and population size diversity. Preference was given to towns that offered all the cost data in their 1998 Solid Waste Report. The selected communities and solid waste regions are presented below:

Table 1: Communities Selected

Community	Population	County	Recycling Collection type	Disposal Collection type
Auburn	23140	Androscoggin	municipal	municipal
Bangor	31431	Penobscot	municipal	contract
Bar Harbor	4755	Hancock	private	private
Bath	9790	Sagadohoc	contract	contract
Bowdoinham	2275	Sagadahoc	contract	contract
Bristol/S.Bristol	2254	Lincoln	drop-off	drop-off
Brunswick	20379	Cumberland	municipal	municipal
Buckfield Area	2565	Oxford	drop-off	drop-off
Bucksport Region	7095	Hancock	drop-off	drop-off
Clinton	3469	Kennebec	private	private
Ellsworth	6301	Hancock	contract	contract
Farmington	7092	Franklin	private	private
Kennebunkport	3416	York	contract	contract
Kingfield	1169	Franklin	private	private
Lewiston	36960	Androscoggin	contract	contract
Livermore	2071	Androscoggin	drop-off	private
Mount Desert	2069	Hancock	drop-off	municipal
Oakland	5830	Kennebec	municipal	drop-off
Pittsfield	3220	Somerset	municipal	private
Skowhegan	8986	Somerset	private	private
Tri-County	6512	Knox	private	private
Veazie	1710	Penobscot	contract	contract

(Population and County data from the 1998-1999 Maine Municipal Directory)

Interviews

The next step in the study was to set up interviews with the municipal officials to get a thorough understanding of the solid waste program costs. These interviews generally lasted an hour or less and were based on a list of prepared questions (see **Appendix A**). Municipal budget forms, annual reports and recycling brochures were collected at these interviews. A few interviews were conducted over the phone and fax machine due to travel and time restraints.

After collection, the information was entered into several tables. The tables were organized to reflect the various components of the recycling and disposal programs. **Appendix B** looks at the costs of rubbish collection. It is broken down into capital, labor, vehicle operation and maintenance, administration costs, and/or the contract amount for rubbish collection. The total cost is then divided by the number of rubbish tons collected to give the collection

cost per ton. **Appendix C** looks at the costs of rubbish processing that takes place at the transfer station. It is broken down into capital, labor, facility operation and maintenance, transportation or hauling, and administration costs, and then divided by the number of tons processed. **Appendix D** looks at the costs of rubbish disposal. It has a column for annual tipping fees at landfills or incinerators that are not owned by the community. If the community does own and operate a landfill, the costs are broken down into capital, labor, operation and maintenance, administration, and other costs. The total disposal cost is then divided by the number of tons disposed.

The next three tables look at the costs of the recycling program. **Appendix E** itemizes recycling collection costs; it breaks down the collection costs of recyclables into vehicle capital, labor, vehicle operation and maintenance, administration costs, and/or a contract amount for collection. **Appendix F** itemizes the costs of the recycling center or transfer station. It breaks the facility costs down into capital, labor, operation and maintenance, administration, and tip fees or transport costs. The total facility cost is divided by the number of tons processed to give a total cost per ton. **Appendix G** shows any revenue received from the sale of recyclables and computes a revenue per ton amount.

Appendices H through J estimate the costs that are not traditionally represented in municipal budgets. **Appendix H** estimates the costs residents must bear by using personal transportation to drop off rubbish. It looks at the number of tons dropped off, the average distance traveled to the drop-off point, and calculates a cost/ton. **Appendix I** itemizes the same costs for tons of recyclables dropped off. **Appendix J** estimates how much residents pay per year in private hauling fees for the collection of both recyclables and rubbish, and computes a cost/ton hauled by private haulers. The data from all of these tables are summarized on **Appendix K** and **Appendix L**.

The data on the tables were taken primarily from town budgets. Whenever possible, 1998 figures were used since they correspond with the information on solid waste tonnages that the communities provided. The fiscal year of many towns runs from July to June and, thus, does not correspond exactly with the calendar year on which the tonnage information is based. However, both measures look at an entire year and, based on conversations with communities, the differences were considered insignificant. Several towns do not keep separate budgets for their disposal and recycling programs, so the costs for each program were separated using the solid waste facility manager's estimate, or by breaking down costs based on percentages of rubbish and recyclable tonnage passing through a facility. All labor numbers include benefits such as health insurance and social security.

Bulky waste, defined as anything that can not fit into a common 30 gallon garbage bag, such as discarded tires, appliances, furniture or furnishings, inert fill, land clearing debris and construction and demolition debris, was not included in this analysis because it is generally handled outside of the "typical" solid waste management program. Whenever possible, costs associated with bulky waste were factored out of the tables. After the information was entered, follow up phone calls were used to fill in any gaps in the data.

V. MUNICIPAL SOLID WASTE PROGRAM COSTS

One of the primary purposes of this study was to gather comprehensive information on *all types* of solid waste programs, including programs where the municipality plays little or no role in financing its solid waste management. Most other cost studies have focused exclusively on the cost to the municipality without regard to the financial burden on the resident. In this report, we include all costs associated with a community's solid waste management, including the costs to residents to either pay a private hauler or haul their MSW to a facility themselves. By including all of these costs, those municipalities which have shifted the financial burden to residents will not have an artificially low cost associated with their program.

In addition, because of a continuing trend in increased solid waste program costs, many municipal officials are carefully scrutinizing the efficiency and mix of their recycling and rubbish programs. For this reason, there is a strong interest in identifying and sharing accurate cost data for both recycling and rubbish programs in order to help communities make informed decisions about the impact of their choices. This report is intended to help fill this need. Therefore, this section includes separate cost data on rubbish and recycling; within each section, there are separate cost tables for both *municipal* costs and *community* costs.

A. Rubbish Costs

1. Municipal Rubbish Costs

Table 1 is a summary of all of the municipal rubbish program costs obtained from the interviews conducted with the communities. It takes the information from **Appendix K** and sorts the communities by rubbish collection type.

Table 1: Municipal Rubbish Costs

Community	Rubbish Collection Type	Collection Cost/ton	Transfer Station Cost/ton	Disposal Cost/ton	Total Rubbish Cost/ton[1]
Bangor	contract	$30.84	$0.00	$50.49	**$81.33**
Bath	contract	$68.72	$0.00	$30.58	**$99.30**
Bowdoinham	contract	$96.13	$0.00	$54.94	**$151.07**
Ellsworth	contract	$33.76	$42.24	$85.57	**$161.57**
Kennebunkport	contract	$73.82	$0.00	$41.99	**$115.81**
Lewiston	contract	$26.48	$0.00	$61.51	**$87.99**
Veazie	contract	$21.04	$0.00	$42.00	**$63.04**
Averages		**$50.11**	--	**$52.44**	**$108.59**
Bristol/S. Bristol	drop-off	$0.00	$83.29	$58.44	**$141.73**
Buckfield Area	drop-off	$0.00	$57.23	$40.43	**$97.66**
Bucksport Region	drop-off	$0.00	$26.65	$65.43	**$92.08**
Oakland	drop-off	$0.00	$43.35	$52.00	**$95.35**
Averages		**$0.00**	**$52.63**	**$54.08**	**$106.71**
Auburn	municipal	$33.45	$0.00	$187.46	**$220.91**
Brunswick	municipal	$27.76	$0.00	$47.28	**$75.04**
Mount Desert	municipal	$49.21	$26.66	$53.58	**$129.44**
Averages		**$36.80**	--	**$96.11**	**$141.80**
Bar Harbor	private	$0.00	$26.33	$46.69	**$73.01**
Clinton	private	$0.00	$37.43	$48.40	**$85.83**
Farmington	private	$0.00	$0.00	$0.00	**$0.00**
Kingfield	private	$0.00	$54.41	$43.65	**$98.06**
Livermore	private	$0.00	$27.62	$60.27	**$87.89**
Pittsfield	private	$0.00	$40.46	$55.00	**$95.46**
Skowhegan	private	$0.00	$69.46	$52.61	**$122.06**
Tri-County	private	$0.00	$99.47	$55.92	**$155.40**
Averages		**$0.00**	**$44.40**	**$45.32**	**$89.71**
Total Averages[2]		**$46.12**	**$45.33**	**$56.10**	**$105.91**

Table 1 is arranged to facilitate the comparison of communities based upon their type of rubbish collection. This can be easily done by looking at the costs of one community and comparing it to the average costs of other communities with the same type of rubbish collection. Individual community costs can also be compared to the averages for the whole data set at the bottom of the table.

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[1] "Total Rubbish Cost/ton" is a summation of the other three columns in the table.

[2] "Total Averages" are averages for the whole data set. They do not include a community when it does not have curbside collection or a transfer station because this would skew the averages. Refer to Appendix E for the explanation of this value.

There are many other factors influencing municipal rubbish program costs besides the type of collection. The information in the "Solid Waste Program Description" section and **Appendix N** will help to explain the variations in the cost/ton figures. For example, Bangor's collection cost/ton, $30.84, is approximately $20 below the average collection cost/ton of communities with contracted rubbish collection. Bowdoinham's collection cost/ton, $96.13, is significantly higher than the average contract collection cost/ton. By looking at **Appendix N**, we can see that Bangor is an urban area with a population density of 908.7 people/square mile. Bowdoinham, on the other hand, is a rural area with population density of 61.6 people/square mile. Bangor has a lower collection cost per ton because the collection trucks have a shorter distance to travel between each stop, and thus have a more efficient collection operation, and lower costs, for each ton picked up. Conversely, in Bowdoinham, the collection vehicle has to travel farther between each stop and thus has a higher average cost.

Table 1 may also be used to compare one type of rubbish collection program with another. For example, the average contracted collection cost/ton is $50.11, while the average municipal collection cost/ton is $36.80. Since both figures include labor, vehicle operation and maintenance, and administration costs as well as an estimate of capital costs (see **Appendix B**), these two average costs can be compared. While it may be possible to conclude that municipal collection is less expensive than contract collection (on an average per ton basis) there are some items to keep in mind:

- while both costs include capital costs, the private sector typically has a higher price to pay for comparable equipment

- the private sector has to pay taxes on equipment, fuel and other operating expenses that municipalities are exempt from

- the contract has to cover anticipated costs, as opposed to actual costs which is reflected in the municipally provided program

- the contract price includes a profit for the contractor, something not found in the municipal program

An interesting aspect of the data in Table 1 is that the average transfer station cost/ton for drop-off communities is higher than for communities with other types of collection. This is partially explained by the additional labor costs associated with these operations since the employees typically assist residents who are dropping off their rubbish. In addition, the costs for hauling to the disposal facility are included in the transfer station costs, but usually are included in the *collection costs* for the contract and municipal collection communities. Hauling costs are not generally included with the contracted and municipal haulers since they usually haul the rubbish directly to the disposal facility and do not make separate trips to or from the transfer station.

While Table 1 can be used to compare the municipal rubbish costs to communities with similar and different collection types, this table does not reflect the full cost to the community of managing their garbage. Residents must bear certain private costs if they contract with a private hauler, and must incur costs when hauling their own rubbish to a municipal drop-off point. These costs are not included in municipal budget sheets, but are real costs to the community. Estimates of these costs are presented in the next section.

2. Community Rubbish Costs

In order to estimate costs borne by the entire community, total private hauling costs and private drop-off costs are added to the total municipal costs below:

Table 2: Community Rubbish Costs (estimates)[1]

Community	Type of Rubbish Collection	Total Municipal Program Cost[3]	Private Hauling Fees[4]	Private Drop-off Costs[5]	Total Community Costs	Tons Disposed[2]	Community Cost/ton
Bangor	contract	$691,351	$0	$0	$691,351	8501	$81.33
Bath	contract	$706,168	$0	$0	$706,168	9790	$72.13
Bowdoinham	contract	$38,976	$0	$0	$38,976	258	$151.07
Ellsworth	contract	$449,800	$0	$5,345	$455,145	2784	$163.49
Kennebunkport	contract	$232,731	$0	$0	$232,731	2869	$81.12
Lewiston	contract	$1,690,822	$0	N/A	$1,690,822	13423	$125.96
Veazie	contract	$46,521	$0	$0	$46,521	738	$63.04
Averages		**$550,910**	**$0**	**--**	**$551,674**	**5480**	**$105.45**
Bristol/S. Bristol	drop-off	$258,805	$0	$70,118	$328,923	1826	$180.13
Buckfield Area	drop-off	$68,362	$0	$22,400	$90,762	700	$129.66
Bucksport Region	drop-off	$233,503	$0	$48,691	$282,194	2536	$111.28
Oakland	drop-off	$270,327	$0	$90,720	$361,047	2835	$127.35
Averages		**$207,749**	**$0**	**$57,982**	**$265,731**	**1974**	**$137.11**
Auburn	municipal	$1,785,616	$0	$0	$1,785,616	8083	$220.91
Brunswick	municipal	$608,578	$0	$13,679	$622,258	10942	$56.87
Mount Desert	municipal	$268,075	$0	$0	$268,075	2071	$129.44
Averages		**$887,423**	**$0**	**--**	**$891,983**	**7032**	**$135.74**
Bar Harbor	private	$470,212	$143,339	N/A	$613,551	6440	$95.27
Clinton	private	$266,067	$99,452	$33,728	$399,247	3100	$128.79
Farmington	private	$0	$432,900	$0	$432,900	3787	$114.31
Livermore	private	$44,647	$42,357	$7,543	$94,547	508	$186.12
Pittsfield	private	$259,181	$151,931	N/A	$411,112	2715	$151.42
Skowhegan	private	$367,703	$273,000	$8,408	$649,111	5255	$123.52
Averages		**$234,635**	**$190,497**	**--**	**$433,411**	**3634**	**$133.24**

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[1] Kingfield and Tri-County were removed from this table due to insufficient data.

[2] This figure is the number of tons the community generates. Since some communities process tonnages from other communities, this figure may be different than the rubbish tonnage figures used in the appendices.

[3] "Total Municipal Program Cost" is calculated by adding the total collection, transfer station and disposal costs from Appendices B, C, and D.

[4] See Appendix J for calculations. This figure represents two-thirds of the total private hauler charge (it was assumed that approximately two-thirds of the total cost to residents is dedicated to rubbish.)

[5] See Appendix H for calculations. Number based on solid waste managers' rough estimations of percentage of rubbish dropped off.

Table 2 accounts for the fees paid by residents to contractors for curbside collection (private hauling fees), and attempts to estimate the costs associated with individuals driving to drop off their own rubbish at a transfer station (private drop-off fees). The table presents the total costs incurred by the municipal government and the total costs incurred by the private residents to give the total cost of rubbish collection, processing and disposal for the whole community (Total community cost). The total community cost is then divided by the number of tons produced in the community to facilitate comparisons between the various methods employed by communities. Caution: this method is not as exact as the methods used to calculate municipal costs/ton in Table 1, and is designed only to provide an estimate of costs. Therefore the cost/ton figures in Table 2 cannot be compared with the cost/ton figures shown in Table 1.

Table 2 shows that communities with private collection have higher community costs than towns with other forms of collection. It also shows that the costs residents incur while driving their trash to a drop-off facility can be a significant amount, averaging $57,982/year in communities without any other form of collection. Some communities have a mix of drop-off and another form of collection for the rubbish generated by their residents. It appears that from this analysis, communities with contracted, curbside collection have the lowest average community cost/ton.

A number of items would impact this comparison, some of them being:

- the transfer station accepts bulky wastes or other types of materials not included in a curbside program, so the trip would need to be made anyway

- the recycling drop-off is adjacent to the transfer station, so that the recyclables are also conveyed with the trash

- often, the trip to the transfer station is made in conjunction with other errands the social opportunities provided at the transfer station.

B. Recycling Costs

1. Municipal Recycling Costs

The following table presents all the municipal recycling program costs from **Appendix L** sorted according to collection type:

Table 3: Municipal Recycling Costs

Community	Recycling Collection Type	Collection Cost/ton	Recycling Center Cost/ton	Total Recycling Cost/ton	Revenue/ton	Net Recycling Cost/ton[1]
Bath	contract	$30.80	$42.30	$73.09	$6.42	**$66.68**
Bowdoinham	contract	$22.81	$238.99	$261.80	$20.76	**$241.04**
Ellsworth	contract	$69.31	$15.49	$84.80	$11.00	**$73.80**
Kennebunkport	contract	$167.13	$26.11	$193.24	$0.00	**$193.24**
Lewiston	contract	$89.38	$96.60	$185.98	$37.85	**$148.13**
Veazie[2]	contract	$91.59	$0.00	$91.59	$5.75	**$85.84**
Averages		$78.50	$69.91	$148.42	--	$134.79
Bristol/S. Bristol	drop-off	$0.00	$107.32	$107.32	$9.20	**$98.12**
Buckfield Area	drop-off	$0.00	$117.54	$117.54	$8.29	**$109.25**
Bucksport Region	drop-off	$0.00	$255.37	$255.37	$16.57	**$238.80**
Livermore	drop-off	$0.00	$158.07	$158.07	$0.00	**$158.07**
Mount Desert	drop-off	$0.00	$69.73	$69.73	$5.50	**$64.23**
Averages		$0.00	$141.61	$141.61	--	$133.69
Auburn[3]	municipal	$107.06	$0.00	$107.06	$0.00	**$107.06**
Bangor	municipal	$62.24	$64.97	$127.21	$26.89	**$100.32**
Brunswick	municipal	$50.16	$65.70	$115.86	$22.40	**$93.45**
Oakland	municipal	$25.00	$76.91	$101.91	$0.46	**$101.45**
Pittsfield	municipal	$53.48	$52.48	$105.96	$45.23	**$60.73**
Averages		$59.59	$52.01	$111.60	--	$92.60
Bar Harbor	private	$0.00	$76.10	$76.10	$25.31	**$50.79**
Clinton	private	$0.00	$66.29	$66.29	$40.00	**$26.29**
Farmington	private	$0.00	$61.62	$61.62	$0.00	**$61.62**
Kingfield	private	$0.00	$70.98	$70.98	$0.79	**$70.19**
Skowhegan	private	$0.00	$81.01	$81.01	$24.47	**$56.54**
Tri-county	private	$0.00	$164.70	$164.70	$8.14	**$156.55**
Averages		$0.00	$86.78	$86.78	--	$70.33
Total Averages[4]				$121.69		$107.37

Table 3 can be used to compare the costs of a community's municipal recycling program with the costs of communities with a similar style of collection. Arranging the cost data by

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[1] "Net Recycling Cost/ton" is calculated by taking the "Total Recycling Cost/ton" and subtracting the "Revenue/ton" figures.

[2] Veazie pays no tipping fees or processing costs for recyclables, but receives only a portion of the revenue.

[3] Auburn pays no tipping fees or processing costs for recyclables, but receives no revenue.

[4] "Total Averages" are determined by averaging the cost/ton figures of all 22 communities.

21

collection type allows for the viewing of some of the variation in municipal costs, but it cannot account for all the variations. For example, both Bowdoinham and Ellsworth have contracted curbside collection of recyclables, but have vastly different recycling center costs per ton ($238.99 and $15.49, respectively). From the information in the "Solid Waste Program Descriptions" at the beginning of this report, we can see that Bowdoinham's high processing cost/ton is largely a result of the recycling center's decision to collect and accept commingled recyclables and, therefore, incur labor and related costs in the handling and processing of these items.   However, the program has resulted in a high recycling rate for the community. Ellsworth, on the other hand, incurs a small capital cost since it owns its recycling building, but due to a favorable contract made when recycling prices were high in 1994-95, it pays no processing costs at all. Bowdoinham's recycling program receives average revenue of $20.76 per ton of recyclables while Ellsworth receives only a fraction of that, or $11.00/ton. The data in Table 3 can be used to make comparisons between the communities.

Comparisons can be made between the average costs of communities with different types of recyclable collection. As with the municipal rubbish costs, it appears that communities with municipal curbside collection of recyclables incur a lower cost per ton than communities with contracted curbside collection. The same differences between municipal operations and private contractors that were explained in the rubbish collection analysis apply here as well.

It is also interesting to compare the average recycling center cost of communities with drop-off collection ($141.61) and the average recycling center costs of communities the other types of collection ($69.91 for contract, $52.01 for municipal, and $86.78 for private). The communities with drop-off collection clearly have higher recycling center costs. This is partially explained by the additional labor and facility operating hours required to handle the residential traffic. In addition, more labor is needed to sort and process the materials that come in from residents compared with the larger volume of already sorted materials that are brought in by contractors.

Another important factor to consider is the value received by the community from the sale of the recyclables. The higher that value, the lower the total cost for the managing of the recycling program. The variation in product value is due partly to the constantly fluctuating recyclables markets and the difference between the vendors and brokers used by the programs. Both the availability of a market and the value received need to be considered - - insofar that a high price today but a cloudy future for a market may not be the best avenue for a community -- a lower price but a consistent demand for the material over the years allows a community to be consistent in sustaining its recycling program over time.

Municipal recycling costs do not account for the total costs borne by the community. The following section includes an analysis of estimates of the private costs not represented in Table 3.

2. Community Recycling Costs

Table 4 presents the total cost picture for recycling, including drop-off and private hauler costs; the data presented in Table 3 only reflect recycling costs incurred by the *municipality*. The actual total costs to the community can be higher, as illustrated in the table below:

Table 4: Community Recycling Costs (estimates)[1]

Community	Type of Recycling Collection	Total Municipal Program Cost[3]	Private Hauling Fees[4]	Private Drop-off Costs[5]	Total Community Costs	Tons Disposed[2]	Community Cost/ton
Bath	contract	$145,492	$0	N/A	$145,492	2174	$66.92
Bowdoinham	contract	$53,993	$0	$2,401	$56,394	224	$251.76
Ellsworth	contract	$33,357	$0	N/A	$33,357	452	$73.80
Kennebunkport	contract	$64,714	$0	$0	$64,714	699	$92.58
Lewiston	contract	$353,321	$0	N/A	$353,321	2269	$155.72
Veazie	contract	$7,468	$0	$0	$7,468	87	$85.84
Averages		**$109,724**	**$0**	**--**	**$110,124**	**984**	**$121.10**
Bristol/S. Bristol	drop-off	$51,708	$0	$20,237	$71,945	527	$136.52
Buckfield Area	drop-off	$22,288	$0	$6,528	$28,816	204	$141.25
Bucksport Region	drop-off	$138,505	$0	$11,136	$149,641	580	$258.00
Livermore	drop-off	$16,281	$0	$2,637	$18,918	103	$183.67
Mount Desert	drop-off	$15,929	$0	$3,968	$19,897	248	$80.23
Averages		**$48,942**	**$0**	**$8,901**	**$57,843**	**332**	**$159.93**
Auburn	municipal	$116,697	$0	N/A	$116,697	1085	$107.55
Bangor	municipal	$272,624	$0	$7,165	$279,789	2204	$126.95
Brunswick	municipal	$171,015	$0	$5,856	$176,871	1830	$96.65
Oakland	municipal	$28,858	$0	$4,512	$33,370	282	$118.33
Pittsfield	municipal	$37,044	$0	$1,757	$38,800	610	$63.61
Averages		**$125,248**	**$0**	**$3,858**	**$129,105**	**1202**	**$102.62**
Bar Harbor	private	$31,899	$71,700	N/A	$103,599	696	$148.85
Clinton	private	$4,864	$49,726	$2,516	$57,106	185	$308.68
Farmington	private	$51,825	$216,450	$25,836	$294,111	841	$349.72
Skowhegan	private	$94,366	$136,500	$2,136	$233,003	1669	$139.61
Averages		**$45,739**	**$118,594**	**$7,622**	**$171,955**	**848**	**$236.71**

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[1] Kingfield and Tri-County were removed from this table due to insufficient data.

[2] This figure is the number of tons the community generates. Since some communities process tonnages from other communities, this figure may be different than the rubbish tonnage figures used in the appendices.

[3] "Total Municipal Program Cost" is calculated by adding the total collection, transfer station and disposal costs from Appendices B, C, and D.

[4] See Appendix J for calculations. This figure represents one-thirds of the total private hauler charge (it was assumed that approximately one-third of the total cost to residents is dedicated to recycling.)

[5] See Appendix H for calculations. Number based on solid waste managers' rough estimations of percentage of rubbish dropped off

Table 4 takes the total costs for the municipal recycling program and adds the total costs that residents pay for private collection and for hauling their own recyclables to the drop-off point. The total community cost figure is then divided by the number of tons of recyclables generated to give a community cost/ton. As in the "Community Rubbish Costs" section, these community cost/ton figures are less exact than the cost/ton figures in Table 3. The figures in Table 4 are meant to serve as estimates only. Furthermore, the "Private Hauling Fees" are the fees associated with both rubbish and recyclable collection. In order to separate the rubbish and recycling components of this cost, interviews would have to be conducted with each of the private hauling companies in each of the communities selected. This is beyond the scope of this report.

Table 4 shows that the average additional cost to residents for bringing their recyclables to a the drop-off point in communities that have no curbside collection is $8,901/year. This is a small fraction of the average total municipal cost of $48,942/year. This implies that due to the small amount of tonnages residents generally bring to the recycling center, operating a recycling drop-off collection system does not add a significant financial burden on the community. Private collection, on the other hand, does add a significant burden. Even if we assume that half the private collection fees are going toward rubbish collection, having private collection adds approximately $177,000 ($355,000 divided by 2) to the annual community recycling costs. These types of figures should be taken into consideration when deciding which collection type is best for each community.

C. Comparison of Rubbish and Recycling Costs

One of the goals of this report is to provide data on both rubbish and recycling programs in order to draw some conclusions about the difference in cost between the two -- or the possible "avoided cost". In looking at the overall cost differences for all towns, the average recycling cost/ton was $107.37, while the average disposal cost/ton was $105.91 -- a difference of $1.46/ton. This analysis shows that for the costs included in this study, it costs about the same amount to recycle as it does to dispose of MSW.

In examining the avoided cost for each program type, there appeared to be no clear patterns that emerged. Within each category (municipal, contract, private, and drop-off), there was a wide range of avoided cost numbers, some negative and some positive. Therefore, it was not appropriate to draw conclusions about the impact of program type on avoided cost. It should again be noted that each town is responsible for developing its own program without state mandates or requirements. As result, there are many variations in program implementations.

VI. CONCLUSIONS

As stated in the Executive Summary, among the major conclusions of this report is that the average cost per ton for recycling and disposal was determined to be just over $100. There is a great deal of variation among programs, however, and no generalizations about costs according to program type can be drawn. In addition, total rubbish costs range from averages of $89.71/ton (private) to $141.80/ton (municipal); whereas average total costs for recycling range from $70.33/ton (private) to 134.79/ton (contract). Clearly, these ranges are quite similar.

When examining total *community* costs, the picture changes slightly. Once again, it should be noted that community costs, while comprehensive, involve more estimating of costs than programs where the municipality is responsible for financing the program.
The overall cost to manage rubbish ranges from $105.45/ton (contract) to $137.11/ton (drop-off). Municipal and private programs are very similar at $135.74/ton and $133.24/ton respectively. For recycling, averages for total community costs range from $102.62/ton (municipal) to $236.71/ton (private), with contract and drop-off somewhere in the middle -- $121.10/ton and $159.93/ton respectively. In this case, the variation in costs is clearly greater with recycling costs than rubbish.

It is important to note that each town or region faces a very different set of circumstances. Some of the other factors (other than program type) that can change the cost equation for towns include population density (this affects collection efficiency and, therefore, cost/ton); tipping fees at each of the facilities; and distance from disposal and recycling facilities (which affects transportation costs). Each of these factors can play a major role in the overall cost of the program. When attempting to measure the impact of various program choices on the cost of a solid waste program, it is important to consider all of the characteristics of a town and the associated cost factors, and find one that is similar.

Although the cost data included in this report reveal certain patterns and trends, and provides a good snapshot of current municipal solid waste program costs, the data presented in this report is not sufficient to draw any conclusions on a state or regional level, or allow for a more thorough evaluation of costs by program type. A possible next step would be to consider a number of the factors that were calculated estimates, such as the community cost figures, in this study and seek additional municipal data for each of the four program types; this approach could allow us to make broader and more comparative statements about the costs for each program type across the state.

TOWN_____

MSW
Collection costs of garbage
Labor _____
Vehicle O&M _____
Administration _____
Contract amt. _____
Total Collection _____
Coll. Capital _____
Tons collected _____

stops per week_____
Cost per stop _____

Transfer Station
Construction _____
Labor _____
Facility O&M _____
Transportation _____
Administration _____
Total cost _____
Tons handled _____

Income from trash_____

Disposal
If use another
town's facility: Tip fees _____
OR
If own facility:
Type _____
Construction _____
Labor _____
Facility O&M _____
Admin.. _____
Closure fund _____
Total cost _____
Tons Disposed _____

RECYCLING
Collection of recycling costs
Vehicle cost _____

Labor _____

Vehicle O&M _____

Admin.. _____

Contract _____

Total collection cost   _____

Tons collected _____

Recycling Center
Capital_____

Labor _____

Facility O&M _____

Admin._____

Tip fees/transport _____

Other _____

Total Cost _____

Tons processed _____

Revenue _____

Cost not accounted for in budget
% MSW dropped off _____

Tons dropped off _____

Ave. Round trip to MSW d.o. _____

% Rec dropped off _____

Tons dropped to rec drop off _____

Ave. Round trip to REC d.o. _____

# of households with private haulers _____

Ave. Private hauler fee _____

Other information:
Employees-
        MSW
        Recycling
Pay-by-the-bag
Recycling ordinance
Curbside collection of recyclables-
        If yes, by who-
Curbside collection of MSW-
        If yes, by who

Curbside bulky waste collection-
    If yes, by who-

DEMOGRAPHICS:
Designation (income levels, urban or rural)

COLLECTION FREQUENCY:
What is the frequency-
Are recyclable materials collected on same day as disposable MSW?

RECOVERED MATERIALS:
      Curbside-
      Drop-off-

Composting Program-
      Costs
      Collection methods
      Yard and leaf waste disposal ban?
      Additional facilities, labor or machinery?

Bulky Waste Program-
      Description
      Costs

PROCESSING:
Who owns the processing facility?
Is there a regional program?

MATERIALS PROCESSED:
Marketing
      Methods
      Marketing committee?
      Time spent

EDUCATION AND PUBLICITY:
      Committee?
      Funds?

Appendix B

Rubbish Collection Costs

Community	Type of Collection	Capital (1)	Annualized Capital (2)	Labor (3)	Vehicle O&M (4)	Administration	Contract Amount	Total Collection	Rubbish tons (no bulky)	Collection Cost/ton
Auburn	municipal	$116,000	$11,600	$187,200	$31,181	$40,398	$0	$270,379	8083	$33.45
Bangor	contract	$0	$0				$262,160	$262,160	8501	$30.84
Bar Harbor	private	$0	$0	$0	$0	$0	$0	$0	6440	$0.00
Bath	contract	$0	$0				$125,064	$125,064	1820	$68.72
Bowdoinham	contract	$0	$0				$24,801	$24,801	258	$96.13
Bristol/S. Bristol	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Brunswick (5)	municipal	$200,000	$20,000	$62,698	$11,320	$8,999	$24,308	$127,325	4587	$27.76
Buckfield Area	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Bucksport Region	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Clinton	private	$0	$0	$0	$0	$0	$0	$0	3100	$0.00
Ellsworth	contract	$0	$0				$93,986	$93,986	2784	$33.76
Farmington	private	$0	$0	$0	$0	$0	$0	$0	3787	$0.00
Kennebunkport	contract	$0	$0			$2,500	$109,750	$112,250	1521	$73.82
Kingfield	private	$0	$0	$0	$0	$0	$0	$0	710	$0.00
Lewiston	contract	$0	$0				$392,800	$392,800	14832	$26.48
Livermore	private	$0	$0	$0	$0	$0	$0	$0	508	$0.00
Mount Desert	municipal	$68,000	$6,800	$71,884	$19,759	$3,464	$0	$101,907	2071	$49.21
Oakland	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Pittsfield	private	$0	$0	$0	$0	$0	$0	$0	2715	$0.00
Skowhegan	private	$0	$0	$0	$0	$0	$0	$0	5255	$0.00
Tri-County	private	$0	$0	$0	$0	$0	$0	$0	1430	$0.00
Veazie	contract	$0	$0				$15,525	$15,525	738	$21.04

2. Due to difficulty in obtaining life-span data for each piece of equipment, an estimate of 10 years is used to annualize all of the collection capital costs.

3. The costs of "Labor," "Vehicle O&M," and "Administration" are $0 for the communities with private curbside collection or drop-off facilities. The communities with contracted collection incur these costs in one amount, labeled "Contract Amount."

4. "Vehicle O&M" includes gasoline costs, oil, supplies, and repairs for the vehicles used in curbside collection.

5. Brunswick has municipal curbside collection for most of the community, but it also has a contract with a private firm for the collection of rubbish in mobile home parks.

Appendix C

Transfer Station Costs

Community	Capital (1)	Annualized Capital (2)	Labor	Facility O&M	Transportation (4)	Administration	Total cost (3)	Rubbish tons	Cost/ton
Auburn	$0	$0	$0	$0	$0	$0	$0	8083	**$0.00**
Bangor	$0	$0	$0	$0	$0	$0	$0	8501	**$0.00**
Bar Harbor	$30,000	$3,000	$29,382	$2,309	$124,061	$10,798	$169,549	6440	**$26.33**
Bath	$0	$0	$0	$0	$0	$0	$0	10262	**$0.00**
Bowdoinham	$0	$0	$0	$0	$0	$0	$0	258	**$0.00**
Bristol/S. Bristol	$425,000	$42,500	$35,769	$23,328	$34,176	$16,312	$152,085	1826	**$83.29**
Brunswick	$0	$0	$0	$0	$0	$0	$0	10178	**$0.00**
Buckfield Area	$64,000	$6,400	$13,316	$6,812	$10,835	$2,697	$40,060	700	**$57.23**
Bucksport Region	$248,000	$24,800	$17,856	$4,908	$17,875	$2,134	$67,573	2536	**$26.65**
Clinton (5)	$9,000	$900	$27,131	$32,218	$33,780	$22,012	$116,042	3100	**$37.43**
Ellsworth	$325,000	$32,500	$0	$61,870	$10,622	$12,606	$117,598	2784	**$42.24**
Farmington	$0	$0	$0	$0	$0	$0	$0	3787	**$0.00**
Kennebunkport	$0	$0	$0	$0	$0	$0	$0	2869	**$0.00**
Kingfield (5)	$157,852	$15,785	$2,922	$4,406	$8,600	$6,921	$38,633	710	**$54.41**
Lewiston	$0	$0	$0	$0	$0	$0	$0	16740	**$0.00**
Livermore	NA	$0	$8,756	$572	$4,702	$0	$14,030	508	**$27.62**
Mount Desert	$0	$0	$0	$0	$55,214	$0	$55,214	2071	**$26.66**
Oakland (5)	$70,000	$7,000	$22,665	$31,884	$29,768	$31,591	$122,907	2835	**$43.35**
Pittsfield	$115,000	$11,500	$56,241	$22,685	$12,300	$7,130	$109,856	2715	**$40.46**
Skowhegan	$180,000	$18,000	$24,395	$14,052	$13,123	$21,680	$91,250	1314	**$69.46**
Tri-County	$288,000	$28,800	$26,217	$46,053	$12,200	$28,976	$142,246	1430	**$99.47**
Veazie	$0	$0	$0	$0	$0	$0	$0	738	**$0.00**

1. Capital costs are taken from rough estimates of municipal officials and represent the original purchase amount.
2. Due to difficulty in obtaining life-span data for each piece of equipment, an estimate of 10 years is used to annualize all of the transfer station capital costs.
3. Communities that haul rubbish directly to a disposal facility or have their own facility have $0 transfer station costs.
4. The "Transportation" column refers to costs associated with hauling rubbish from the transfer station to the disposal facility.
5. Clinton, Kingfield and Oakland do not have separate facilities for rubbish and recyclables, so the cost of processing rubbish at the transfer station is estimated by determining the percentage of tons of rubbish passing through the facility and multiplying the total facility cost by this percentage.

Appendix D

Disposal Costs

Community	Tip fees	Facility	Capital (1)	Annualized Capital (2)	Labor	Facility O&M	Administration	Other (4) (5)	Total cost	Rubbish tons	Cost/ton
Auburn (3)	$315,237	MMWAC	$24,000,000	$1,200,000					$1,515,237	8,083	187.46
Bangor	$429,191								$429,191	8,501	50.49
Bar Harbor	$300,663								$300,663	6,440	46.69
Bath		Landfill	$3,500,000	$175,000	$83,355	$118,390	$4,359	$200,000	$581,104	19,000	30.58
Bowdoinham	$14,175								$14,175	258	54.94
Bristol/S. Bristol	$106,720								$106,720	1,826	58.44
Brunswick		Landfill	$4,000,000	$200,000	$129,207	$134,226	$17,820		$481,253	10,178	47.28
Buckfield Area	$28,302								$28,302	700	40.43
Bucksport Region	$165,930								$165,930	2,536	65.43
Clinton	$150,025								$150,025	3,100	48.4
Ellsworth	$238,216								$238,216	2,784	85.57
Farmington	$0								$0	3,787	0
Kennebunkport	$120,481								$120,481	2,869	41.99
Kingfield	$30,992								$30,992	710	43.65
Lewiston	$570,478	Landfill	$12,777,864	$690,695	$265,735	$200,720	$19,250	$121,622	$1,298,022	21,103	61.51
Livermore	$30,617								$30,617	508	60.27
Mount Desert	$110,954								$110,954	2,071	53.58
Oakland	$147,420								$147,420	2,835	52
Pittsfield	$149,325								$149,325	2,715	55
Skowhegan	$276,453								$276,453	5,255	52.61
Tri-County	$79,971								$79,971	1,430	55.92
Veazie	$30,996								$30,996	738	42

Notes:

1. Capital costs are taken from rough estimates of municipal officials and represent the original purchase amount.

2. An estimated average lifetime of 20 years is used to annualize the capital associated with landfills and incinerators.

3. Auburn pays reduced tipping fees to the MMWAC waste to energy facility, but invested $24 million during its construction. This amount is considered a capital investment in this analysis.

4. Bath's entry under the "Other" column accounts for the $4 million (annualized over a 20 year lifetime) that was raised through bond issues to clean up the old landfill site and improve the leachate collection system in the new landfill.

5. Lewiston's entry under the "Other" column refers to the $2.25 million closure fund they must raise through tipping fees throughout the 18.5 year life span of the facility.

Appendix E

Recycling Collection Costs

Community	Type of Collection	Capital (1)	Annualized Capital (2)	Labor (3)	Vehicle O&M (4)	Administration	Contract Amount	Total Collection	Recycling tons	Collection Cost/ton
Auburn	municipal	$64,373	$6,437	$78,000	$10,906	$21,353	$0	$116,697	1,090	$107.06
Bangor (5)	municipal	$0	$0	$54,568	$46,761	$38,023	$0	$139,352	2,239	$62.24
Bar Harbor	private	$0	$0	$0	$0	$0	$0	$0	628	$0.00
Bath	contract						$67,200	$67,200	2,182	$30.80
Bowdoinham	contract						$5,110	$5,110	224	$22.81
Bristol/S. Bristol	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Brunswick	municipal	$140,000	$14,000	$58,789	$10,000	$9,000	$0	$91,789	1,830	$50.16
Buckfield Area	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Bucksport Region	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Clinton	private	$0	$0	$0	$0	$0	$0	$0	185	$0.00
Ellsworth	contract						$31,329	$31,329	452	$69.31
Farmington	private	$0	$0	$0	$0	$0	$0	$0	841	$0.00
Kennebunkport	contract						$46,463	$46,463	278	$167.13
Kingfield	private	$0	$0	$0	$0	$0	$0	$0	347	$0.00
Lewiston	contract						$202,800	$202,800	2,269	$89.38
Livermore	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Mount Desert	drop-off	$0	$0	$0	$0	$0	$0	$0	0	$0.00
Oakland	municipal	$10,000	$1,000	$4,800	$1,500	$0	$0	$7,300	292	$25.00
Pittsfield (5)	municipal	$0	$0	$30,629	$1,995	$0	$0	$32,624	610	$53.48
Skowhegan	private	$0	$0	$0	$0	$0	$0	$0	1,669	$0.00
Tri-County	private	$0	$0	$0	$0	$0	$0	$0	393	$0.00
Veazie	contract						$7,968	$7,968	87	$91.59

Notes:

1. Capital costs are taken from rough estimates of municipal officials and represent the original purchase amount.
2. Due to difficulty in obtaining life-span data for each piece of equipment, an estimate of 10 years is used to annualize all of the collection capital costs.
3. The costs of "Labor," "Vehicle O&M," and "Administration" are $0 for the communities with private curbside collection or drop-off facilities. The communities with contracted collection incur these costs in one amount, labeled "Contract Amount."
4. "Vehicle O&M" includes gasoline costs, oil, supplies, and repairs for the vehicles used in curbside collection.
5. Bangor and Pittsfield have $0 collection capital costs because the recycling collection program uses municipal vehicles. All costs to use these vehicles are included in the "Vehicle O&M" column.

Appendix F

Recycling Center Costs

Community	Capital (1)	Annualized Capital (2)	Labor	Facility O&M	Administration	Tipping fees or Transportation (3)	Other	Total Cost	Recycling Tons	Cost/ton
Auburn	$0	$0	$0	$0	0	$0		$0	1,090	**$0.00**
Bangor	$125,000	$12,500	$91,225	$60,102	63,566.1	$0		$227,393	3,500	**$64.97**
Bar Harbor	$91,100	$9,110	$8,485	$8,604	21,594.54	$0		$47,794	628	**$76.10**
Bath	$2,300	$230	$0	$0	2,600	$89,462		$92,292	2,182	**$42.30**
Bowdoinham	$107,500	$10,750	$20,000	$8,783	14,000	$0		$53,533	224	**$238.99**
Bristol/S. Bristol	$40,000	$4,000	$28,239	$6,653	16,665	$1,000		$56,556	527	**$107.32**
Brunswick	$75,000	$7,500	$58,789	$36,117	17,820	$0		$120,226	1,830	**$65.70**
Buckfield Area	$34,700	$3,470	$13,316	$4,321	2,696.6	$175		$23,979	204	**$117.54**
Bucksport Region	$195,000	$19,500	$71,422	$22,511	17,538.4	$17,145		$148,117	580	**$255.37**
Clinton (5)	$74,100	$7,410	$1,619	$1,922	1,313.25	$0		$12,264	185	**$66.29**
Ellsworth (4)	$125,000	$12,500	$0	$0	0	$0	-5,500	$7,000	452	**$15.49**
Farmington	$20,000	$2,000	$6,694	$4,648	5,000	$33,484		$51,825	841	**$61.62**
Kennebunkport	$0	$0	$0	$0	2,500	$15,751		$18,251	699	**$26.11**
Kingfield (5)	$77,151	$7,715	$1,428	$2,153	3,382.52	$9,951		$24,630	347	**$70.98**
Lewiston	$297,399	$29,740	$150,277	$54,000	13,475	$0		$247,492	2,562	**$96.60**
Livermore	$10,000	$1,000	$8,756	$572	0	$5,953		$16,281	103	**$158.07**
Mount Desert	$5,000	$500	$4,379	$3,414	0	$9,000		$17,293	248	**$69.73**
Oakland (5)	$14,000	$1,400	$13,000	$3,285	3,254.52	$750		$21,689	282	**$76.91**
Pittsfield	$80,000	$8,000	$15,500	$6,730	1,782.56	$0		$32,013	610	**$52.48**
Skowhegan	$203,000	$20,300	$72,993	$20,230	21,679.87	$0		$135,203	1,669	**$81.01**
Tri-County	$111,000	$11,100	$11,236	$24,798	2,573.7	$15,019		$64,726	393	**$164.70**
Veazie	$0	$0	$0	$0	0	$0		$0	87	**$0.00**

Notes:

1. Capital costs are taken from rough estimates of municipal officials and represent the original purchase amount.

2. Due to difficulty in obtaining life-span data for each piece of equipment, an estimate of 10 years is used to annualize all of the recycling center capital costs.

3. The "Tipping fees or Transportation" column accounts for any fee the community pays to another facility or company for processing and/or hauling.

4. Ellsworth owns the recycling center building, but it contracts out all of the processing services. The contract stipulates that the company returns a small percentage of the revenue to Ellsworth and pays an annual lease on the recycling building of $5,500 per year, recorded under the "Other" column.

5. Clinton, Kingfield and Oakland do not have separate facilities for rubbish and recyclables, so the cost of processing recyclables at the transfer station is estimated by determining the percentage of tons of recyclables passing through the facility and multiplying the total facility cost by this percentage.

Appendix G

Recycling Revenue

Community	Recycling Tons	Recycling Revenue	Revenue/ton
Auburn (1)	1,090	$0	**$0.00**
Bangor	3,500	$94,121	**$26.89**
Bar Harbor	628	$15,895	**$25.31**
Bath (1)	2,182	$14,000	**$6.42**
Bowdoinham	224	$4,650	**$20.76**
Bristol/S. Bristol (1)	527	$4,848	**$9.20**
Brunswick	1,830	$41,000	**$22.40**
Buckfield Area	204	$1,691	**$8.29**
Bucksport Region	580	$9,612	**$16.57**
Clinton	185	$7,400	**$40.00**
Ellsworth	452	$4,972	**$11.00**
Farmington (1)	841	$0	**$0.00**
Kennebunkport (1)	699	$0	**$0.00**
Kingfield (1)	347	$273	**$0.79**
Lewiston	2,562	$96,972	**$37.85**
Livermore (1)	103	$0	**$0.00**
Mount Desert (1)	248	$1,364	**$5.50**
Oakland	282	$131	**$0.46**
Pittsfield	610	$27,593	**$45.23**
Skowhegan	1,669	$40,836	**$24.47**
Tri-County (1)	393	$3,200	**$8.14**
Veazie (1)	87	$500	**$5.75**

Notes:

1. Communities like Auburn, Bath, Bristol/ S. Bristol, Farmington, Kennebunkport, Kingfield, Livermore, Mount Desert, Tri-County, and Veazie do not process their own recyclables. They either give their materials away or pay another facility to process them. The other facility uses the revenues to defray operating costs and may only return a fraction of the revenue to the communities.

Appendix H

Private Rubbish Drop-off Costs

Community	Disposal Tons	Percent Rubbish Dropped off (1)	Tons Dropped off	Average Trip To Rubbish Drop off (mi.) (2)	Total Cost (3)	Cost/ton Dropped off (4)
Auburn	8,083	0%	0	0.0	$0	0
Bangor	8,501	0%	0	0.0	$0	0
Bar Harbor	6,440	N/A	0	1.3	N/A	N/A
Bath	10,262	0%	0	2.5	$0	0
Bowdoinham	258	0%	0	0.0	$0	0
Bristol/S. Bristol	1,826	100%	1826	6.0	$70,118	38.4
Brunswick	10,178	4%	427	5.0	$13,679	32
Buckfield Area	700	100%	700	5.0	$22,400	32
Bucksport Region	2,536	100%	2536	3.0	$48,691	19.2
Clinton	3,100	68%	2108	2.5	$33,728	16
Ellsworth	2,784	30%	835	1.0	$5,345	6.4
Farmington	3,787	0%	0	6.0	$0	0
Kennebunkport	2,869	0%	0	0.0	$0	0
Kingfield	710	N/A	0	5.0	N/A	N/A
Lewiston	16,740	N/A	0	2.5	N/A	N/A
Livermore	508	58%	295	4.0	$7,543	25.6
Mount Desert	2,071	0%	0	0.0	$0	0
Oakland	2,835	100%	2835	5.0	$90,720	32
Pittsfield	2,715	20%	543	0.0	N/A	N/A
Skowhegan	5,255	25%	1314	1.0	$8,408	6.4
Tri-County	1,430	75%	1073	7.5	$51,480	48
Veazie	738	0%	0	0.0	$0	0

Notes:

1. "Percent Rubbish Dropped off" is based on rough estimates of facility operators to serve as a guideline figure.

2. "Average Trip to Rubbish Drop off" is an estimate of the average number of miles a person would travel to the drop-off point. One-way values are used to account for the fact that many people drop off MSW on the way to do some thing else.

3. "Total Cost" is determined by taking the number of tons dropped off and multiplied by 200 to convert the tonnage into average car loads of 100 pounds. This number is multiplied by the number of miles driven and then multiplied by $0.32/mile to give an estimate of the cost borne by the people who drop off rubbish.

4. "Cost/ton Dropped off" gives an estimate of how much each ton dropped off costs the residents.

Appendix I

Private Recycling Drop-off Costs

Community	Recyclable Tons	Percent Recyclables Dropped off (1)	Tons Dropped off	Average Trip To Recycling Drop off (mi.) (2)	Total Cost (3)	Cost/ton Dropped off (4)
Auburn	1,090	0%	0	0.0	$0	0
Bangor	2,239	25%	560	2.0	$7,165	3.2
Bar Harbor	628	N/A	N/A	1.3	N/A	N/A
Bath	2,182	N/A	N/A	2.5	N/A	N/A
Bowdoinham	224	67%	150	2.5	$2,401	10.72
Bristol/S. Bristol	527	100%	527	6.0	$20,237	38.4
Brunswick	1,830	20%	366	2.5	$5,856	3.2
Buckfield Area	204	100%	204	5.0	$6,528	32
Bucksport Region	580	100%	580	3.0	$11,136	19.2
Clinton	185	85%	157	2.5	$2,516	13.6
Ellsworth	452	N/A	N/A	1.0	N/A	N/A
Farmington	841	80%	673	6.0	$25,836	30.72
Kennebunkport	699	0%	0	0.0	$0	0
Kingfield	347	N/A	N/A	5.0	N/A	N/A
Lewiston	2,269	N/A	N/A	2.5	N/A	N/A
Livermore	103	100%	103	4.0	$2,637	25.6
Mount Desert	248	100%	248	2.5	$3,968	16
Oakland	282	50%	141	5.0	$4,512	16
Pittsfield	610	45%	275	1.0	$1,757	2.88
Skowhegan	1,669	20%	334	1.0	$2,136	1.28
Tri-county	393	75%	295	7.5	$14,148	36
Veazie	87	0%	0	0.0	$0	0

Notes:

1. "Percent Recyclables Dropped off" is based on rough estimates of facility operators to serve as a guideline figure.

2. "Average Trip to Recycling Drop off" is an estimate of the average number of miles a person would travel to the drop-off point. One-way values are used to account for the fact that many people drop off MSW on the way to do some thing else.

3. "Total Cost" is determined by taking the number of tons dropped off and multiplied by 200 to convert the tonnage into average car loads of 100 pounds. This number is multiplied by the number of miles driven and then multiplied by $0.32/mile to give an estimate of the cost borne by the people who drop off recyclables.

4. "Cost/ton Dropped off" gives an estimate of how much each ton dropped off costs the residents.

Appendix J

Private Hauling Costs

Community	Type of Rubbish Collection	Type of Recycling Collection	Households With Private Haulers	Average Private Fee/year	Total Cost (1)	Total Rubbish Cost (2)	Total Recycling Cost (3)	Tons Hauled By Private Haulers (4)	Cost/ton Hauled
Auburn	municipal	municipal	0	$0	$0	0	$0	0	$0.00
Bangor	contract	municipal	0	$0	$0	0	$0	0	$0.00
Bar Harbor	private	private	2067	$104	$215,009	$143,339	$71,700	7068	$30.42
Bath	contract	contract	0	$0	$0	0	$0	0	$0.00
Bowdoinham	contract	contract	0	$0	$0	0	$0	0	$0.00
Bristol/S. Bristol	drop-off	drop-off	0	$0	$0	0	$0	0	$0.00
Brunswick	municipal	municipal	0	$0	$0	0	$0	0	$0.00
Buckfield Area	drop-off	drop-off	0	$0	$0	0	$0	0	$0.00
Bucksport Region	drop-off	drop-off	0	$0	$0	0	$0	0	$0.00
Clinton	private	private	1043	$143	$149,178	$99,452	$49,726	1020	$146.29
Ellsworth	contract	contract	0	$0	$0	0	$0	0	$0.00
Farmington	private	private	2775	$234	$649,350	$432,900	$216,450	3955	$164.18
Kennebunkport	contract	contract	0	$0	$0	0	$0	0	$0.00
Kingfield	private	private	N/A	N/A	N/A	N/A	N/A	1057	N/A
Lewiston	contract	contract	0	$0	$0	0	$0	0	$0.00
Livermore	private	drop-off	378	$168	$63,535	$63,535	$0	213	$297.78
Mount Desert	municipal	drop-off	0	$0	$0	0	$0	0	$0.00
Oakland	drop-off	municipal	0	$0	$0	0	$0	0	$0.00
Pittsfield	private	municipal	1461	$156	$227,896	$227,896	$0	1898	$120.10
Skowhegan	private	private	2625	$156	$409,500	$273,000	$136,500	5276	$77.61
Tri-county	private	private	N/A	$104	N/A	N/A	N/A	456	N/A
Veazie	contract	contract	0	$0	$0	0	$0	0	$0.00

Notes:

1. "Total Cost" is derived by multiplying the number of households with a private hauler times the average annual private hauler fee.

2. "Total Recycling Cost" is one third of the "Total Cost". This is an estimate of the total private cost designated for the recycling portion of the MSW collection.

3. "Total Rubbish Cost" is two thirds of the "Total Cost". This is an estimate of the total private cost designated for the rubbish portion of the MSW collection.

4. "Tons Hauled by Private Hauler" is determined by adding rubbish and recyclable tonnage together, and subtracting the number of tons dropped off from Appendicies K and L.

Appendix K

Overview Analysis- Rubbish (1)

Community	Municipal Costs					Private Costs	
	Rubbish Collection Type	Collection Cost/ton	Transfer Station Cost/ton	Disposal Cost/ton	**Total Rubbish Cost/ton**	Cost/ton For Private Hauling (2)	Cost/ton For Private Drop Off (2)
Auburn	municipal	$33.45	$0.00	$187.46	**$220.91**	$0.00	0
Bangor	contract	$30.84	$0.00	$50.49	**$81.33**	$0.00	0
Bar Harbor	private	$0.00	$26.33	$46.69	**$73.01**	$71,700.00	N/A
Bath	contract	$68.72	$0.00	$30.58	**$99.30**	$0.00	0
Bowdoinham	contract	$96.13	$0.00	$54.94	**$151.07**	$0.00	0
Bristol/S. Bristol	drop-off	$0.00	$83.29	$58.44	**$141.73**	$0.00	38.4
Brunswick	municipal	$27.76	$0.00	$47.28	**$75.04**	$0.00	32
Buckfield Area	drop-off	$0.00	$57.23	$40.43	**$97.66**	$0.00	32
Bucksport Region	drop-off	$0.00	$26.65	$65.43	**$92.08**	$0.00	19.2
Clinton	private	$0.00	$37.43	$48.40	**$85.83**	$49,726.00	16
Ellsworth	contract	$33.76	$42.24	$85.57	**$161.57**	$0.00	6.4
Farmington	private	$0.00	$0.00	$0.00	**$0.00**	$216,450.00	0
Kennebunkport	contract	$73.82	$0.00	$41.99	**$115.81**	$0.00	0
Kingfield	private	$0.00	$54.41	$43.65	**$98.06**	N/A	N/A
Lewiston	contract	$26.48	$0.00	$61.51	**$87.99**	$0.00	N/A
Livermore	private	$0.00	$27.62	$60.27	**$87.89**	$0.00	25.6
Mount Desert	municipal	$49.21	$26.66	$53.58	**$129.44**	$0.00	0
Oakland	drop-off	$0.00	$43.35	$52.00	**$95.35**	$0.00	32
Pittsfield	private	$0.00	$40.46	$55.00	**$95.46**	$0.00	N/A
Skowhegan	private	$0.00	$69.46	$52.61	**$122.06**	$136,500.00	6.4
Tri-County	private	$0.00	$99.47	$55.92	**$155.40**	N/A	48
Veazie	contract	$21.04	$0.00	$42.00	**$63.04**	$0.00	0
Averages					**$105.91**		

Notes:

1. Please refer to Appendicies E, F, G, K and M for more detailed descriptions of the origins of this data. Also refer to the report text for a detailed analysis of this data.

2. The last two columns are not added into the "Total Rubbish Cost/ton" because they are based on rough estimates and are divided by different tonnages than the other figures. They are included for reference only.

Appendix L

Overview Analysis- Recycling (1)

Community		Municipal						Private	
	Recycling Collection Type	Collection Cost/ton	Recycling Center Cost/ton	Total Recycling Cost/ton	Revenue/ton	**Net Recycling Cost/ton**	Rubbish Recycling Cost/ton (2)	Cost/ton For Private Hauling (3)	Cost/ton For Private Drop Off (3)
Auburn	municipal	$107.06	$0.00	$107.06	$0.00	**$107.06**	$113.85	$0.00	0
Bangor	municipal	$62.24	$64.97	$127.21	$26.89	**$100.32**	($18.99)	$0.00	3.2
Bar Harbor	private	$0.00	$76.10	$76.10	$25.31	**$50.79**	$22.22	$71,700.00	N/A
Bath	contract	$30.80	$42.30	$73.09	$6.42	**$66.68**	$32.62	$0.00	N/A
Bowdoinham	contract	$22.81	$238.99	$261.80	$20.76	**$241.04**	($89.97)	$0.00	10.72
Bristol/S.	drop-off	$0.00	$107.32	$107.32	$9.20	**$98.12**	$43.62	$0.00	38.4
Brunswick	municipal	$50.16	$65.70	115.86	$22.40	**$93.45**	($18.41)	$0.00	3.2
Buckfield Area	drop-off	$0.00	$117.54	$117.54	$8.29	**$109.25**	($11.59)	$0.00	32
Bucksport	drop-off	$0.00	$255.37	$255.37	$16.57	**$238.80**	($146.73)	$0.00	19.2
Clinton	private	$0.00	$66.29	$66.29	$40.00	**$26.29**	$59.54	$49.726.00	13.6
Ellsworth	contract	$69.31	$15.49	$84.80	$11.00	**$73.80**	$87.77	$0.00	N/A
Farmington	private	$0.00	$61.62	$61.62	$0.00	**$61.62**	($61.62)	$216,450.00	30.72
Kennebunkport	contract	$167.13	$26.11	$193.24	$0.00	**$193.24**	($77.43)	$0.00	0
Kingfield	private	$0.00	$70.98	$70.98	$0.79	**$70.19**	$27.87	N/A	N/A
Lewiston	contract	$89.38	$96.60	$185.98	$37.85	**$148.13**	($60.14)	$0.00	N/A
Livermore	drop-off	$0.00	$158.07	$158.07	$0.00	**$158.07**	($70.18)	$0.00	25.6
Mount Desert	drop-off	$0.00	$69.73	$69.73	$5.50	**$64.23**	$65.21	$0.00	16
Oakland	municipal	$25.00	$76.91	$101.91	$0.46	**$101.45**	($6.09)	$0.00	16
Pittsfield	municipal	$53.48	$52.48	$105.96	$45.23	**$60.73**	$34.74	$0.00	2.88
Skowhegan	private	$0.00	$81.01	$81.01	$24.47	**$56.54**	$65.52	$136,500.00	1.28
Tri-county	private	$0.00	$164.70	$164.70	$8.14	**$156.55**	($1.16)	N/A	36
Veazie	contract	$91.59	$0.00	$91.59	$5.75	**$85.84**	($22.80)	$0.00	0
Averages				**121.69**		**$107.37**	**($1.46)**		

Notes:

1. Please refer to Appendicies H, I, J, L and M for more detailed descriptions of the origins of this data. Also refer to the report text for a detailed analysis of this data.

2. The "Rubbish minus Recycling Cost/ton" takes the "Total Rubbish Cost/ton" from Spreadsheet L and subtracts the "Net Recycling Cost/ton" to give the relation between the costs.

3. The last two columns are not added into the "Net Recycling Cost/ton" because they are based on rough estimates and are divided by different tonnages than the other figures. They are included for reference only.

Appendix M

Recyclable Materials Collected in 1998 by Type (1)

Community	Office Paper	Card-board	News-paper	Maga-zines	Mixed Paper	Clear Glass	Green Glass	Brown Glass	Mixed Glass	Metal	Alimi-num	Tin Cans	HDPE (#2)	PET (#1)	Other Plastic	Other	Total
Auburn	yes	yes	yes	yes		yes				yes		yes	yes			yes	9
Bangor		yes	yes						yes	yes		yes	yes				6
Bar Harbor	yes	yes		yes						yes			yes		yes		6
Bath	yes	yes	yes	yes		yes						yes	yes		yes		8
Bowdoinham		yes	yes	yes	yes	yes				yes	yes	yes	yes			yes	10
Bristol/S.Bristol		yes	yes		yes	yes	yes	yes		yes		yes	yes		yes	yes	11
Brunswick	yes	yes	yes						yes			yes	yes			yes	7
Buckfield Area	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes					11
Bucksport Region		yes	yes	yes					yes	yes			yes	yes		yes	8
Clinton		yes		yes	yes	yes	yes	yes		yes	yes	yes	yes		yes	yes	12
Ellsworth		yes	yes	yes					yes	yes		yes	yes				7
Farmington	yes	yes	yes		yes	yes	yes	yes			yes	yes	yes				10
Kennebunkport	yes	yes	yes	yes		yes				yes	yes	yes	yes				9
Kingfield	yes	yes	yes	yes		yes	yes	yes			yes	yes	yes				10
Lewiston	yes	yes	yes		yes	yes				yes		yes	yes				8
Livermore		yes		yes	yes					yes		yes	yes				6
Mount Desert	yes	yes	yes	yes		yes				yes		yes	yes				8
Oakland		yes		yes						yes		yes	yes	yes		yes	7
Pittsfield	yes	yes	yes	yes		yes				yes		yes	yes				8
Skowhegan	yes	yes	yes		yes		yes				yes	yes	yes				8
Tri-County		yes	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes				11
Veazie		yes	yes						yes	yes		yes	yes				6
# of Communities	12	22	18	11	12	14	7	6	5	17	8	20	21	2	4	7	

Notes:

1. All data taken from the 1998 Municipal Solid Waste Annual Report, Section 2, "Nonbulky MSW Recycling". Communities may accept other materials not included in the Solid Waste Report.

Appendix N

Community Profiles

Community	Population	Land Area (sq. mi.) (1)	Density (population/ sq. mi.) (1)	Designation (1)	Recycling Collection Type	Recycling Collection/ Month	Rubbish Collection Type	Rubbish Collection/ Month	Number of Materials Recycled (2)	Pay-by-the-bag Program	Recycling Ordinance
Auburn	23140	61.67	375.2	urban	municipal	4	municipal	4	9	no	no
Bangor	31431	34.59	908.7	urban	municipal	4	contract	4	6	no	no
Bar Harbor	4755	44.48	106.9	urban	private	4	private	4	6	no	no
Bath	9790	9.84	994.9	urban	contract	4	contract	4	8	no	yes
Bowdoinham	2275	36.95	61.6	rural	contract	4	contract	4	10	yes	no
Bristol/S. Bristol	2254	47.81	47.1	suburban	drop-off	5	drop-off	0	11	no	no
Brunswick	20379	49.73	409.8	urban	municipal	4	municipal	4	7	no	yes
Buckfield Area	2565	83.32	30.8	rural	drop-off	0	drop-off	0	11	no	no
Bucksport Region	7095	105.82	67.0	urban	drop-off	0	drop-off	0	8	yes	no
Clinton	3469	38.67	89.7	urban	private	4	private	4	12	no	no
Ellsworth	6301	93.37	67.5	urban	contract	1	contract	4	7	yes	yes
Farmington	7092	53.94	131.5	urban	private	4	private	4	10	no	yes
Kennebunkport	3416	21.44	159.3	urban	contract	2	contract	4	9	no	no
Kingfield	1169	38.18	30.6	rural	private	4	private	4	10	no	yes
Lewiston	36960	36.83	1003.5	urban	contract	4	contract	4	8	no	no
Livermore	2071	40.12	51.6	suburban	drop-off	0	private	4	6	no	yes
Mount Desert	2069	40.15	51.5	urban	drop-off	0	municipal	4	8	no	no
Oakland	5830	25.81	225.9	urban	municipal	1	drop-off	0	7	no	no
Pittsfield	3220	47.17	68.3	urban	municipal	2	private	4	8	no	no
Skowhegan	8986	61.48	146.2	urban	private	4	private	4	8	no	yes
Tri-County	6512	198.46	32.8	rural	private	4	private	4	11	yes	no
Veazie	1710	3.38	505.9	suburban	contract	2	contract	4	6	no	no

Notes:

1. Population, Land Area, and Designation data taken from Maine State Planning Office files and records.
2. For a breakdown of what materials each community recycles, see Appendix P.